

PATENT

Atty. Dkt. No. ATT-3493.00174 (ATT/2000-0561)

REMARKS

In view of the above amendment and the following discussion, the Applicants submit that none of the claims now pending in the application are made obvious under the provisions of 35 U.S.C. § 103. Thus, the Applicants believe that all of these claims are now in allowable form.

I. REJECTION OF CLAIMS 1-31 UNDER 35 U.S.C. § 103

The Examiner has rejected claims 1-31 in the Office Action under 35 U.S.C. § 103 as being unpatentable over by Gfeller, et al. (U.S. Patent 6,850,709, issued on February 1, 2005, hereinafter referred to as "Gfeller") in view of Kartalopoulos (U.S. Patent 6,580,538, issued on June 17, 2003, hereinafter referred to as "Kartalopoulos"). Applicants respectfully traverse the rejection.

Gfeller teaches an apparatus and method for improved connectivity in wireless optical communications. Namely, Gfeller teaches a method and apparatus for receiving an infrared signal. (See Gfeller, col. 2, ll. 64-67, emphasis added.) Gfeller utilizes a L-Pulse Position Modulation (L-PPM) scheme where a defined data symbol of duration t_b is subdivided into a set of L, where L=2, 4, 6, 8, 16 equal time slots. (See Gfeller, col. 6, ll. 13-37.) Only one of the subdivided timeslots contains a "1" and all other slots are contain "0". (See *Id.*)

Kartalopoulos teaches reduction of optical impairments in wavelength division multiplexed systems employing a wavelength bus architecture. Kartalopoulos employs a scheme to reduce bit patterns, such as "all ones," that give rise to four wave mixing or other non-linear effects. (See Kartalopoulos, col. 3, ll. 39-46.) More specifically, Kartalopoulos tries to transform "all ones" bit patterns into a bit pattern that does not have "all ones." (See Kartalopoulos, col. 6, ll. 30-39.)

The Examiner's attention is directed to the fact that Gfeller and Kartalopoulos, alone or in any permissible combination, fail to teach, show or suggest a method for increasing transmission distance using ledons with an encoding scheme that reduces a number of ones disproportionately relative to a number of zeros, as positively claimed in Applicants' independent claims. Specifically, Applicants' claim 1 shown below is representative of Applicants' independent claims:

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1. A method for increasing transmission distance of a fiber optical communications link using tedons comprising the steps of:

Encoding a data signal to be transmitted using an encoding scheme that reduces a number of ones disproportionately relative to a number of zeros in said data signal; and

Transmitting said encoded data signal over said fiber optical communications link using said tedons. (Emphasis Added)

Applicants teach a system and method for increasing transmission distance and/or transmission data rates using tedons with an encoding scheme that reduces a number of ones disproportionately relative to a number of zeros. Long-haul transmission of information with optical fibers and in-line optical amplifiers, using digital on/off transmission format, suffers from two main impairments. One is the presence of the amplified spontaneous emission (ASE) noise of the amplifiers. The second impairment is the signal distortion caused by optical nonlinearity, chiefly the Kerr effect. Unfortunately, solutions that address one of these impairments often significantly exacerbate the other impairment.

Applicants respectfully submit that the Examiner has interpreted Gfeller too broadly. Gfeller fails to teach, show or suggest using tedons or an encoding scheme that reduces a number of ones disproportionately relative to a number of zeros. In contrast, Gfeller only teaches using a Pulse Position Modulation. (See Gfeller, col. 6, ll. 13-37.) Applicants respectfully submit that Pulse Position Modulations are not tedons *per se*. Tedons are a very specific type of short pulse with low duty cycle. (See Applicants' specification, para. [5].)

Moreover, Gfeller teaches a L-PPM scheme where a defined data symbol of duration t_D is subdivided into a set of L, where $L=2, 4, 6, 8, 16$ equal time slots. (See Gfeller, col. 6, ll. 13-37.) Only one of the subdivided timeslots contains a "1" and all other slots are contain "0". (See *Id.*) In other words, Gfeller teaches a scheme where the signal is set or defined to have only a single timeslot contain a "1". In contrast, the Applicants' invention teaches an encoding scheme that reduces a number of ones disproportionately relative to a number of zeros. Therefore, Gfeller simply does not teach a system and method for increasing transmission distance and/or transmission data rates using tedons with an encoding scheme that reduces a number of ones

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disproportionally relative to a number of zeros.

Moreover, Kartalopoulos fails to bridge the significant gap left by Gfeller. First, the Applicants respectfully submit that Gfeller and Kartalopoulos cannot be meaningfully combined. Gfeller focuses on the receiving end of solving infrared communications problems. In contrast, Kartalopoulos focuses on the transmission end of solving problems in WDM systems. In addition, Kartalopoulos fails to teach, show or suggest a system and method for increasing transmission distance and/or transmission data rates using tedons with an encoding scheme that reduces a number of ones disproportionately relative to a number of zeros. Kartalopoulos only teaches a scheme that transforms "all ones" bit patterns into a bit pattern that does not have "all ones." (See Kartalopoulos, col. 6, ll. 30-39.) Therefore, the combination of Gfeller and Kartalopoulos does not teach, show or suggest Applicants' invention as recited in independent claims 1, 3, 5, 7, 9, 11, 13, 15, 17, 19, 21, 23, 25, 27 and 29-31.

Furthermore, dependent claims 2, 4, 6, 8, 10, 12, 14, 16, 18, 20, 22, 24, 26 and 28 depend from claims 1, 3, 5, 7, 9, 11, 13, 15, 17, 19, 21, 23, 25, and 27 and recite additional limitations. As such, and for the exact same reason set forth above, the Applicants submit that claims 2, 4, 6, 8, 10, 12, 14, 16, 18, 20, 22, 24, 26 and 28 are also patentable over Gfeller and Kartalopoulos and respectfully request the rejection be withdrawn.

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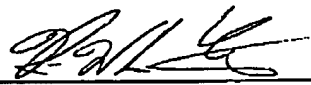
Conclusion

Thus, the Applicants submit that all of these claims now fully satisfy the requirements of 35 U.S.C. §103. Consequently, the Applicants believe that all these claims are presently in condition for allowance. Accordingly, both reconsideration of this application and its swift passage to issue are earnestly solicited.

If, however, the Examiner believes that there are any unresolved issues requiring the issuance of a final action in any of the claims now pending in the application, it is requested that the Examiner telephone Mr. Kin-Wah Tong, Esq. at (732) 530-9404 so that appropriate arrangements can be made for resolving such issues as expeditiously as possible.

Respectfully submitted,

11/10/05
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